Remarks

Claims 13-24 are rejected under 35 U.S.C. 103 as being obvious in view of Crundwell. Applicant respectfully traverses. In short, Crundwell does not teach or suggest a process to simulate microbiologically heap leaching an ore (1) in a confined volume or (2) controlling heat loss in the confined volume in response to monitored temperatures in a plurality of locations inside the confined volume.

Instead, Crundwell teaches a method of controlling a heap leach process by controlling the irrigation rate (Abstract). A heap leach process, however, is not the same as or remotely similar to a confined volume process that seeks to simulate the heap leach process. While Crundwell mentions that a laboratory column has been used in the extraction of chalcopyrite ores, Crundwell does not describe or suggest any of the details or operating parameters of such columns. In fact, Crundwell does not even teach or suggest that his process of controlling irrigation rate could be simulated using the mentioned columns. Thus, despite the fact that Crundwell mentions laboratory columns one of skill in the art would not have been motivated to even try Crundwell's process in a column, much less try the claimed process.

The Office Action takes note of the fact that Crundwell mentions autothermal conditions of microbiological heap leaching (referring to paragraph 139). Mention of an autothermal condition, however, is irrelevant to the claimed process. As Crundwell notes, an autothermal condition is that point that, after starting a bioleach reactor, external heat no longer need be applied and soon thereafter, the tanks require cooling.

Put another way, the autothermal point is that point in the leach process where the heat generated from the leaching of sulfide is sufficient to maintain and/or increase the temperature of that portion of the heap to the desired temperature.

While not stated in the Office Action, it appears that the Office Action takes the position that an autothermal condition is equivalent to the claimed zero heat loss. Applicant cannot agree. The meaning of autothermal is explained above and it is a different concept than controlling heat loss from the confined volume, which is concerned with stopping heat transfer from the confined volume to the atmosphere. These two concepts are entirely different and thus, a discussion of an autothermal condition is irrelevant to controlling heat loss.

Moreover, the Office Action states that it would have been obvious to perform the simulation by monitoring the temperature of the material at each of a plurality of locations and, in response to the monitored temperatures, controlling heat loss from the confined volume. The Office Action does not provide any rationale for this conclusion and in fact, there is nothing in Crundwell that teaches or suggests that any sort of simulation should be conducted in a manner to control heat loss from a confined volume. Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). In the complete absence of any teaching or suggestion, a *prima facie case* of obviousness cannot be established. If the

Examiner contends that such would have been obvious to one of skill in the art, Applicant requests that the Examiner provide some factual evidence of such.

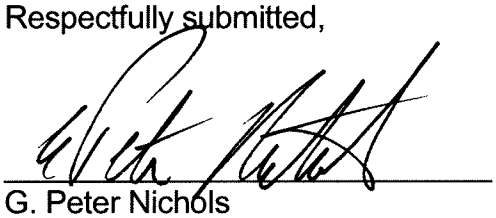
The Office Action also concludes, without any rationale or support, that it would have been obvious to "perform the simulation of the microbiological heap leach requiring a control of heat loss within the laboratory column to replicate the autothermal conditions of the real leaching process as taught by Crundwell". As explained above, an autothermal condition does not teach or suggest controlling heat loss from the confined volume. To the contrary, when a portion of a heap reaches an autothermal condition, the heat within that portion is transferred to adjacent portions, which eventually causes the temperature to increase in the portion of the heap near the top, as explained by Crundwell. Accordingly, Crundwell does not teach controlling heat loss; but rather teaches the opposite concept. Therefore, it is not seen how Crundwell teaches or suggests the presently claimed invention.

As an aside, Applicant notes that the Office Action focuses on claim 1 and does not make mention of the various features required by the dependent claims in the present application. For example, claim 14 requires reducing the heat loss effectively to zero. Claim 15 requires controlling the operation of a plurality of heat sources. Claim 21 requires the step of manipulating the position of at least one temperature zone in the material in the confined volume. Neither the Office Action nor Crundwell address these concepts. Thus, these claims are patentable not only because the features required by claim 13 are not disclosed or suggested by Crundwell, but because the features

required by each of the dependent claims are not disclosed or suggested by Crundwell. Applicant therefore respectfully requests that the rejection be withdrawn and the claims be allowed.

The Examiner is invited to contact the undersigned attorney for the Applicant via telephone if such communication would expedite allowance of this application. If, for any reason, the Examiner feels that the above amendments and remarks do not put the claims in condition for allowance, the undersigned attorney can be reached at (312) 321-4276 to resolve any remaining issues.

Respectfully submitted,



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